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COLD-STORAGE PROSPECTS FOR APPLES AND PEARS IN 1947

by

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1947 Storage Requirements Below 1946

It is estimated that some 35 million bushels of apples and pears will be in storage at the December 1 storage peak in 1947. This is a quantity about a million bushels below 1946 peak storage. 1/ These estimates are based on a number of factors--size of the potential crop, the percentage of the crop which is normally stored, export outlook, and the probable requirements for apples for processing. The commercial production of apples and pears in the apple-pear storing States was estimated by the United States Crop Reporting Board on August 10 to be about 145.5 million bushels. This figure, of course, may be changed as a result of weather conditions, development of scab, the appearance of coddling moth or other insects, or any factors interfering with harvesting operations. The 145½ million bushel estimate for the commercial apple-pear crop in apple-pear storing States is 9½ million bushels under last year's crop estimate for the same States.

The storage situation for apples and pears may be influenced somewhat by unfavorable export conditions. With the United Kingdom out of the market and Army buying for exportation reported to be reduced, some apples, which would normally find outlets abroad, will this year be stored in American warehouses. Last year about 5.2 million bushels were exported. Most of these apples came from the Virginia area and the Pacific Northwest. As will be shown later, those are the areas with more storage space than is needed this year so it is not likely that changed exports will create a storage problem. A foreign trade factor which is perhaps of more significance in the storage picture than the stoppage of exports is the recent agreement for Canadian imports. While the figure agreed upon for importation of Canadian apples--not to exceed 3,500,000 bushels, not more than 2,275,000 of which are to be packed for fresh sale--is not particularly high, many of these apples normally come into the United States through the North Central States where cooler storage space is more at a premimum than elsewhere in the country. This may have a direct bearing upon the adequacy of cold-storage space in that area. Not all Canadian apples, of course, enter the United States from this direction; some of them come into Washington and Oregon.

Present indications are that 1947 apple requirements for processing will be considerably lower than in 1946. As in the case of curtailed exports, reduction in processing will not greatly augment the storage problem. Most of the apples for processing generally come from the Virginia and Pennsylvania areas where this year's

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1/ Since storage peaks for different States are reached from 1 to 3 months apart, the composite peak for various States will exceed the above figure. It is estimated that the composite peak will be about 36½ million bushels. (See table 1.) The estimated figure for total United States peak storage was derived by applying the percentage of total production in the apple-pear storing States, which is normally in storage on December 1. On ordinary crop years this is about 24 percent. In short crop years it is only 23 percent. Percentages since 1942 rounded to the nearest whole number were 24 for each year except 1943 and 1945, when they were 23 and 22 respectively. Both 1943 and 1945 were years of very low production. In selecting a percentage for estimating 1947 peak storage loads by States, the percentage of the total crop stored at the peak was derived for 1946, 1945, 1944 and the 5-year average for each State. For most of the larger States the percentage was practically the same for various years. Where there were variations, the percentage to be applied to the 1947 crop was the one for the year with the crop most nearly equal to the 1947 estimated crop.

Table 1. -- Summary of the apple and pear storage situation for 1947

State	1947 expected crop	1947 expected peak storage	Net capacity of apple houses 1/	Excess or deficiency of apple house space 2/	Quantity stored in public cold storage Dec. 1, 1946 3/	Excess or deficiency of cooler space if quantity in pub. cold stor. is same as 1946
	1,000 bu.	1,000 bu.	1,000 bu.	1,000 bu.	1,000 bu.	1,000 bu.
Maine, N. H.	1,820	218	128	— 90	1	— 89
Vermont	840	294	217	— 77	-	— 77
Massachusetts	2,942	1,589	1,145	— 444	126	— 318
R. I., Conn.	1,574	787	891	104	88	192
New York	17,009	5,613	6,300	687	1,653	2,340
New Jersey	2,178	849	583	— 266	520	254
Pennsylvania	6,685	1,337	1,427	90	752	842
Del., Md., D. C.	1,215	85	233	148	88	236
Virginia	4,761	1,428	5,674	4,246	260	4,506
West Virginia	2,516	478	1,182	704	38	742
North Carolina	1,223	49	26	— 23	36	13
Ohio	3,402	612	348	— 264	344	80
Indiana	1,676	352	229	— 123	117	— 6
Illinois	4,552	1,366	776	— 590	665	75
Michigan	7,320	732	664	— 68	353	285
Wisconsin	821	164	-	— 164	142	— 22
Minn., Iowa	451	226	-	— 226	104	— 122
Missouri	1,851	740	486	— 254	395	141
Nebr., Kans	1,008	192	53	— 139	107	— 32
Ky., Tenn.	892	259	134	— 125	167	42
Ark., Okla., Tex.	932	149	80	— 69	172	103
Mont., Colo., Utah.	2,666	80	-	— 80	77	— 3
Idaho, N. Mex.	3,081	61	245	184	21	205
Washington	42,106	14,316	17,524	3,208	245	3,453
Oregon	8,508	2,297	2,133	— 164	505	341
California	23,440	2,344	1,233	— 1,111	828	— 283
U. S. total 5/	145,469	36,617 4/	41,711	5,094	7,804	12,898

1/ October 1, 1945, Space Survey, adjusted for any expansions reported to the USDA since that date.

2/ Figures in this column are based on the assumption that apple houses are used to store apples and pears only.

3/ United States public cooler occupancy on August 1, 1947, was exactly the same as on August 1, 1946, and occupancy for most of the States did not show much variation for these two dates. It may therefore be assumed that, for the United States as a whole, at least as many apples may be stored in public coolers on December 1, 1947, as on December 1, 1946. (See text, pages 3 and 4, for discussion of public cooler adequacy in Maine, N. H., Vt., Mass., Wis., Minn., Iowa, Kans, and Calif.)

4/ Peak storage loads for the various States are reached at different times, from one to three months apart. The total peak load shown is a composite of the State peak loads and not the total United States peak for any given month. (See also note 1, page 1.)

5/ Total for apple- and pear-storing States only.

crop is abnormally low and where storage space is sufficient to care for any additional apples which may be placed in warehouses as a result of reduced processing requirements.

Cold storage space in the United States would be more than adequate to store the 35 million bushels estimated to be into storage at the peak, if that space were located in areas where it all could be used. Space in apple houses, now practically empty, could accommodate about 42 million bushels of apples and pears. If public storages, which on August 1, 1947, had the same over-all cooler occupancy as on August 1, 1946, store the same quantity of apples and pears as last year, some 13 million bushels will be stored in these commercial houses this year. This would bring the total potential cold-storage capacity for apples and pears to about 55 million bushels. However, this space is not all in States where it is needed. Some States this year apparently will have more apples than they can handle if the usual portion of production normally stored seek storage space in 1947. These States are Maine, Vermont, Massachussetts, Wisconsin, Minnesota, Iowa, Kansas, and California.

Adequacy of Cooler Space for Apples on an Area Basis

While estimates for total United States production of apples and pears for 1947 are below 1946 levels, this total is down chiefly because of extremely low production in the heavy apple-growing regions of Virginia, West Virginia, Pennsylvania, and Maryland. All except these States and the Mountain States will probably have storage loads of apples and pears at the December peak in 1947 exceeding the quantitites in cold storage at the peak in 1946. The apple-pear 1947 peak cold-storage loads for Maine, New Hampshire, Vermont, Indiana, Illinois, Michigan, Minnesota, Iowa, Missouri, Nebraska, Kansas, Kentucky, Tennessee, Washington, and California will probably be greater even than the bumper year of 1944.

Areas where Space Congestion may Develop

While the estimated apple-pear crop and the storage requirements for 1947 are greater than in 1944 and 1946 in many areas, the storage problem is not likely to be as great as in 1944 because of reduced public cooler occupancies. Certain areas should be considered as possible trouble points at the storage peak, however. If attention is now directed toward those areas, congestion in cold storage space can, by judicious planning, be avoided during the apple harvesting season.

New England. Commercial crop estimates for 1947 apples in New England are higher than the 10-year average and are above any year since 1942. An examination of table 1, page 2, will reveal that apple house space in New England falls short of meeting the requirements of the total apple-storage load by about half a million bushels. Only Rhode Island and Connecticut have sufficient apple house space to care for the portion of their production which would normally be stored in that area. Public warehouses in Massachusetts in 1946 afforded storage for about 125,000 bushels, and those houses should be able to care for more apples in 1947. Public storage occupancy in Massachussetts on August 1, 1947, was some 20 points below occupancy on August 1, 1946, which means that these houses can store from 25 to 50 thousand bushels more than in 1946. Another feature in the warehouse situation in Massachussetts is that a new warehouse, capable of providing for from 150 to 200 thousand bushels of apples in its cooler space, will be ready for this year's crop. However, despite the expansion of facilities and an occupancy in Massachussetts on August 1, 1947, lower than in 1946, present indications are that a shortage of cooler space for apples will develop at the storage peak. This deficit of space may be equivalent to the space required by about 100 to 125 thousand bushels. Space in the three northernmost States--Maine, New Hampshire and Vermont--will also probably be inadequate. Production is up in these States. August 1, 1947, cooler storage occupancy of public warehouses stood at 92 percent, and there is very little public space in these States to draw upon. About 150,000 bushels of apples which would

normally be stored in this area will this year have to be placed elsewhere. Thus, the usual proportion of the crop is stored, the total space in Maine, New Hampshire, Vermont, and Massachusetts is likely to be insufficient to care for from about 250,000 to 275,000 bushels of this year's storage crop. It is recommended, however, that plans for any November storage outside the producing areas be made in advance of the storage season.

North Central States. Throughout the North Central States, there is a deficiency of space in apple houses to care for the apples and pears which normally seek storage in that area. Apple producers and distritutors depend quite heavily on commercial warehouses for apple storage in this region. It is estimated that the deficiency of apple house space for apples and pears which will probably demand cold storage in this region in 1947, will amount to the space required for almost 2 million bushels. In 1946, public warehouses stored slightly more than this quantity at the December 1 peak, at which time those warehouses were operating at about 77 percent of capacity. Public warehouse occupancy in these States on August 1, 1947, was slightly below the occupancy on August 1, 1946. It seems, therefore, that public warehouses should be able to care for any apples that cannot be stored in apple houses. However, it should be pointed out that in August 1946 there were almost 5 million cases of shell eggs in storage in these States, $4\frac{1}{4}$ million of which were removed from storage during the fall months, thereby releasing space sufficient to store about 4 million bushels of apples. On August 1, 1947, only 2 million cases of eggs were in storage in this area. Obviously, less than half the space that was opened up for apples in the North Central States in 1946 by the withdrawal of shell eggs can be made available this year. If public warehouses in the North Central States store the same quantities of apples as in 1946, the requirements for apple storage will barely be met in Ohio, and Illinois; while Missouri will have some surplus space. Public warehouses in Indiana, Wisconsin, Minnesota, Iowa, and Kansas, however, would have to store about 200,000 bushels more apples than in 1946, if probable cold storage space demands for 1947 apples are met. Michigan, it appears, will have surplus space for about 275,000 bushels. This space, however, is out of the direct route to market for most of the North Central States that have a shortage of space. It is suggested that, where possible, apples imported from Canada be stored in the surplus space in Michigan until the storage peak is passed in the States farther South. Minnesota and Iowa public warehouses, if 1947 demands for apple storage are met, will have to care for about twice the quantities stored in 1946. This makes no allowance for probable increased Canadian imports through those States. August 1 cooler occupancy in Minnesota and Iowa was about 90 percent. Thus, it would appear that many apples which normally would be stored in Iowa and Minnesota must be stored elsewhere. It is recommended that apples produced in the States with insufficient storage and to be sold in eastern markets be routed directly to eastern storages in order to leave space in the producing area for apples to be marketed in central United States.

Pacific States. Two West Coast States--Oregon and California--have insufficient space in apple houses to store that portion of the apple-pear crop which normally goes into refrigerated storage. The deficiency in apple house space for the estimated 1947 storage requirements amounts to the space required by about $1\frac{1}{4}$ million bushels, over a million of which are in California. Washington apple houses have an estimated surplus of refrigerated apple house space that can care for $3\frac{1}{4}$ million bushels. However, that space is impracticable for use by other apple-producing areas in the United States. Some of it, no doubt, will be required to store apples that normally would be shipped abroad, as a significant portion of the Northwest apple industry depends on exports, some half million bushels of which went from this area in 1946 to the United Kingdom. Increased Canadian imports may also utilize some of this unused apple space in Washington. It is recommended that wherever possible Washington apple growers retain their apples in Washington storages until after the storage peak or ship them directly to States having ample storage space, rather than depend upon the Central States where it is possible that cooler storage

congestion may develop. A minor point concerning the Washington apple storage situation is the adequacy of space in the two major producing areas--Wenatchee--Okanogan and Yakima. About 51 percent of the refrigerated storage space in Washington is in the Wenatchee-Okanogan Valley. Here, where the greatest portion of Washington apples is produced, space in 1946 was more than adequate. The 1947 estimated production in this valley is down somewhat from last year, so space should be adequate. The Yakima Valley crop for 1947, based on estimates of the Traffic Association, is the largest in years. In 1946, the Yakima Valley, which has about half the space in Washington, stored only 5,231,000 bushels of apples. Thus, even though the Yakima Valley production is the heaviest in years, storage space should be sufficient.

Oregon and California apple houses, as heretofore stated, will be unable to meet the anticipated 1947 storage requirements for apples and pears by about 1¼ million bushels. Public warehouses in Oregon and California stored 505,000 and 828,000 bushels of apples, respectively, on December 1, 1946. In Oregon, no space shortage is imminent, as public warehouses can easily supply the space needed for apples that cannot be stored in apple houses. But California commercial warehouses will have to store more apples and pears than in 1946, if the portion of the apple-pear crop normally stored under artificial refrigeration in that area is accommodated this year. California public coolers were 59 percent filled on August 1, 1946 as compared with an occupancy of 63 percent on August 1, 1947. Thus coolers are already more nearly full than last year. Warehouses on December 1, 1946, however, were not carrying capacity loads, California coolers being 80 percent filled on that date.

The California apple-pear storage needs for 1947 are estimated to be for about 2,300,000 bushels--400,000 bushels more than in 1946 and 500,000 bushels more than in 1944. For the past 5 years the percentage of apples and pears in California that are in cold storage in that State at the peak of storage has quite consistently been 10 percent. The 1947 estimates are based on this percentage. Apple houses in California can store approximately 1,200,000 bushels, leaving 1,100,000 bushels for public warehouses. Public warehouses would have to store almost 300,000 bushels more than were stored on December 1, 1946--when cooler occupancy was 80 percent--if 1947 California apples storage requirements are to be met. August 1, 1947, California cooler occupancy was above that of August 1, 1946, and shell eggs in storage, which ordinarily provide apple space through fall withdrawals, are at a minimum this year. Thus, it appears quite clear that congestion of cooler space may develop here in 1947 because of the greatly augmented 1947 crop.

Storage Prospects in Other Areas

The apple-pear crop in the areas other than those named heretofore seems to portend very few storage problems. While production is relatively good in the Middle Atlantic States, it does not equal that of 1944, and production for the area as a whole is short of that in 1946. In New York, the prospective crop is better in the Hudson Valley, where storage space is more plentiful, than in the western part of the State.. The Virginia and Shenandoah Valley crop is less than half that of 1946. Obviously, no difficulty will be encountered here. Other apple-pear storing States should have little difficulty in providing storage for the portion of the crop normally stored in those States.

Conclusion

Three regions in the United States present possible trouble spots for apple storage this year despite an estimated total United States crop lower than that of 1946--Upper New England, Wisconsin, Minnesota, Iowa, Kansas, and California. Of these areas, New England should be able to care for any problem arising there by judicious preseason planning for storage between the producing area and the market.

Wisconsin, Minnesota, Iowa, and Kansas producers should plan, wherever possible, to store in Eastern States early in the season, while Michigan producers can help by retaining apples of that State in their own warehouses. As to the Pacific States, only California presents any sizable problem. Retention of locally grown apples in Washington and Oregon until the storage peak is past, or shipping to States with ample space, will materially assist other areas. In shipping eastward, California growers should, if at all possible, avoid causing congestion in the Central States through in-transit storage.

The Marketing Facilities Branch receives on the first of each month from cold storage warehousemen reports on available space in their warehouses. If, during the harvesting season, growers and shippers have difficulty in locating suitable storage space, the Marketing Facilities Branch, Production and Marketing Administration, United States Department of Agriculture, Washington 25, D. C., will give them whatever assistance is possible.

Table 2.--Production of apples and pears and storage peaks by States (1944-47)

State	1944		1945		1946		1947 1/	
	Apple-pear production	Storage peak	Apple-pear production	Storage peak	Apple-pear production	Storage peak	Apple-pear production	Storage peak
	1,000 bu.	1,000 bu.	1,000 bu.	1,000 bu.	1,000 bu.	1,000 bu.	1,000 bu.	1,000 bu.
Maine, N.H....	1,720	225	273	18	1,238	44	1,820	218
Vermont.....	516	217	106	11	425	139	840	294
Massachusetts.	2,759	1,554	420	258	2,044	944	2,942	1,589
R.I., Conn....	1,875	823	636	264	1,288	697	1,574	787
New York.....	18,167	6,094	2,432	1,042	15,809	5,221	17,009	5,613
New Jersey....	2,142	952	1,332	499	2,993	879	2,178	849
Pennsylvania..	9,564	2,075	2,590	753	8,913	1,659	6,683	1,337
Del.,Md.,D.C..	2,792	192	1,023	44	2,582	200	1,215	85
Virginia.....	15,008	4,280	3,961	1,142	13,328	4,165	4,761	1,428
West Virginia.	4,784	908	1,968	512	5,179	944	2,516	478
North Carolina	2,136	34	612	46	1,547	55	1,223	49
Ohio.....	5,768	834	1,222	330	2,485	513	3,402	612
Indiana.....	1,520	313	974	146	1,316	279	1,676	352
Illinois.....	2,753	977	3,038	846	3,843	1,153	4,552	1,366
Michigan.....	8,818	947	1,428	297	8,256	706	7,320	732
Wisconsin.....	805	213	316	118	996	142	821	164
Minn., Iowa...	317	160	239	62	270	149	451	226
Missouri.....	835	489	1,187	332	1,378	597	1,851	740
Nebr., Kansas.	436	130	436	130	699	135	1,008	192
Ky., Tenn.....	859	221	1,341	129	891	259	892	259
Ark.,Okla.,Tex.	796	161	1,242	211	1,173	182	932	149
Mont.Colo.Utah	3,358	81	2,556	48	1,716	78	2,666	80
Idaho,N.Mex...	2,779	15	3,050	11	2,300	52	3,081	61
Washington....	39,767	12,583	34,670	12,138	41,600	14,040	42,106	14,316
Oregon.....	7,786	2,122	8,321	2,086	9,090	2,317	8,508	2,297
California....	16,561	1,820	24,777	1,643	20,566	1,992	23,440	2,344
U.S.total2/	3/154,621	4/38,425	3/100,150	4/23,116	3/151,925	4/37,541	3/145,469	4/36,617

1/ Estimated.

2/ Total for apple and pear-storing States only.

3/ Apples and pears grown in the above-named States only.

4/ Total of the State peaks which occur in various months--not the total peak which occurs December 1--estimated to be about 35,100,000 bushels for 1947.

Table 3. -- Quantities of apples and pears stored in coolers of refrigerated apple houses and in general cold-storage warehouses, by States, December 1, 1944, 1945, and 1946

State	1944		1945		1946	
	Apples and pears stored in refrigerated apple houses	Apples and pears stored in general cold storages	Apples and pears stored in refrigerated apple houses	Apples and pears stored in general cold storages	Apples and pears stored in refrigerated apple houses	Apples and pears stored in general cold storages
	1,000 bu.	1,000 bu.	1,000 bu.	1,000 bu.	1,000 bu.	1,000 bu.
Maine, N. H.	785	758	7	9	43	1
Vermont	103	-	5	1	86	-
Massachusetts	1,094	280	77	106	647	126
R. I., Conn.	303	174	150	45	485	88
New York	4,025	2,085	524	408	3,120	1,653
New Jersey	288	716	175	322	347	520
Pennsylvania	830	1,246	232	405	834	752
Del., Md., D. C.	94	98	1	40	96	88
Virginia	3,441	849	726	156	3,539	260
West Virginia	904	6	360	2	885	38
North Carolina	8	26	16	29	7	36
Ohio	314	533	41	290	148	344
Indiana	115	124	47	75	145	117
Illinois	354	596	242	608	487	665
Michigan	342	626	43	252	353	353
Wisconsin	-	214	-	119	-	142
Minn., Iowa	-	160	-	61	-	104
Missouri	181	310	92	241	202	395
Nebr., Kans.	27	103	8	124	23	107
Ky., Tenn.	92	216	7	122	50	167
Ark., Okla., Tex.	15	150	2	208	15	172
Mont., Colo., Utah.	1	80	-	48	-	77
Idaho, N. Mex.	6	13	3	6	32	21
Washington	12,395	228	11,824	280	13,795	245
Oregon	1,639	480	1,643	443	1,739	505
California	975	842	941	703	1,164	828
U. S. total	27,631	10,213	17,166	5,103	28,242	7,804

1/ A few apples and pears are stored in other States. These are not included in the United States total above.